FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

5 to 11 January, 2014 (Week 02)

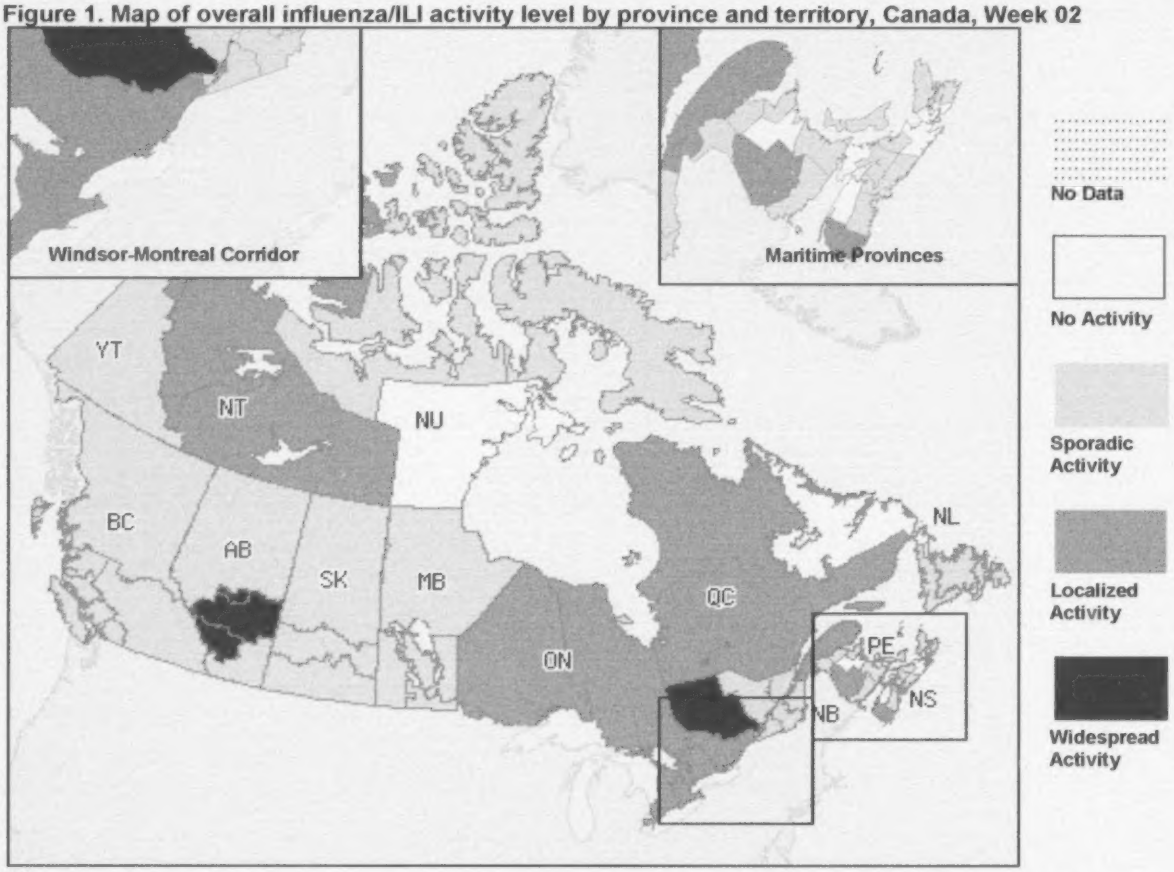
Overall Summary

- Influenza activity in Canada continued to increase in week 02, with most indicators following a similar trend to the 2012-13 season but lagging by 2-3 weeks. However, over 90% of laboratory detections this season have been A(H1N1)pdm09 compared to 10% in 2012-13.
- Surveillance of laboratory detections, hospitalizations with influenza and prescriptions for influenza antivirals all show a greater proportion of cases among adults 20-64 years of age compared to those ≥65 years of age, which is a change from the demographics of the 2012-13 season.
- At this point, it is too early in the season to predict the total number of cases that may be seen, or when flu season will peak.

Influenza/ILI Activity (geographic spread)

In week 02, three regions in Alberta and one in Quebec reported widespread activity, and 13 regions (in ON(7), QC(2), NS(1), NB(1) and NT(2)) reported localized activity (Figure 1).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 02

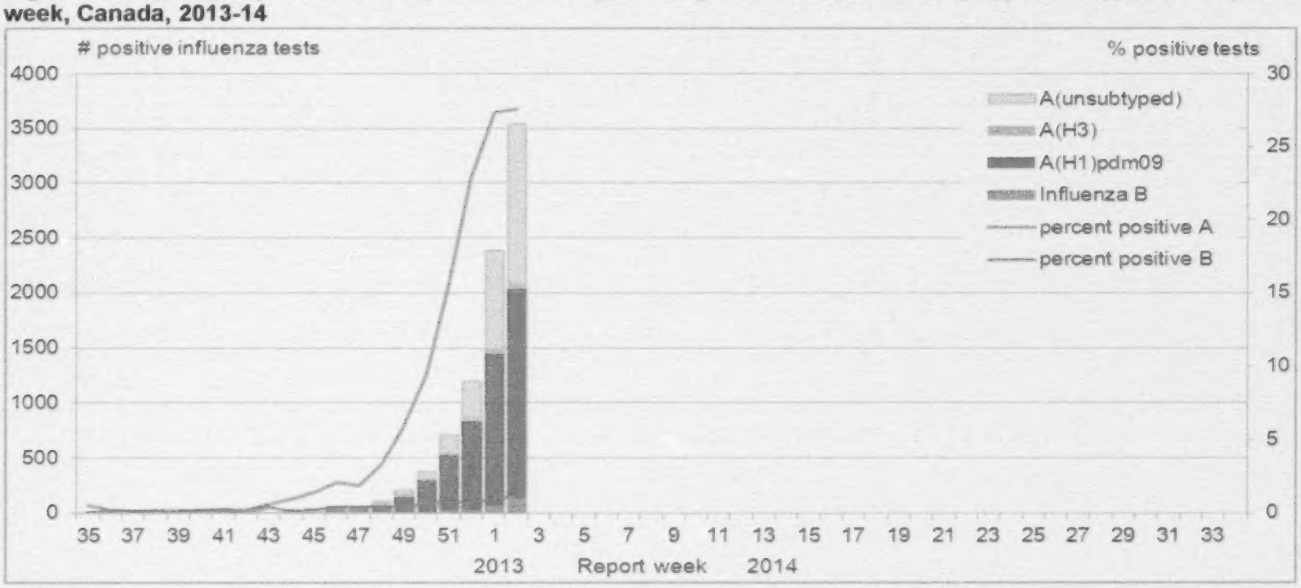


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

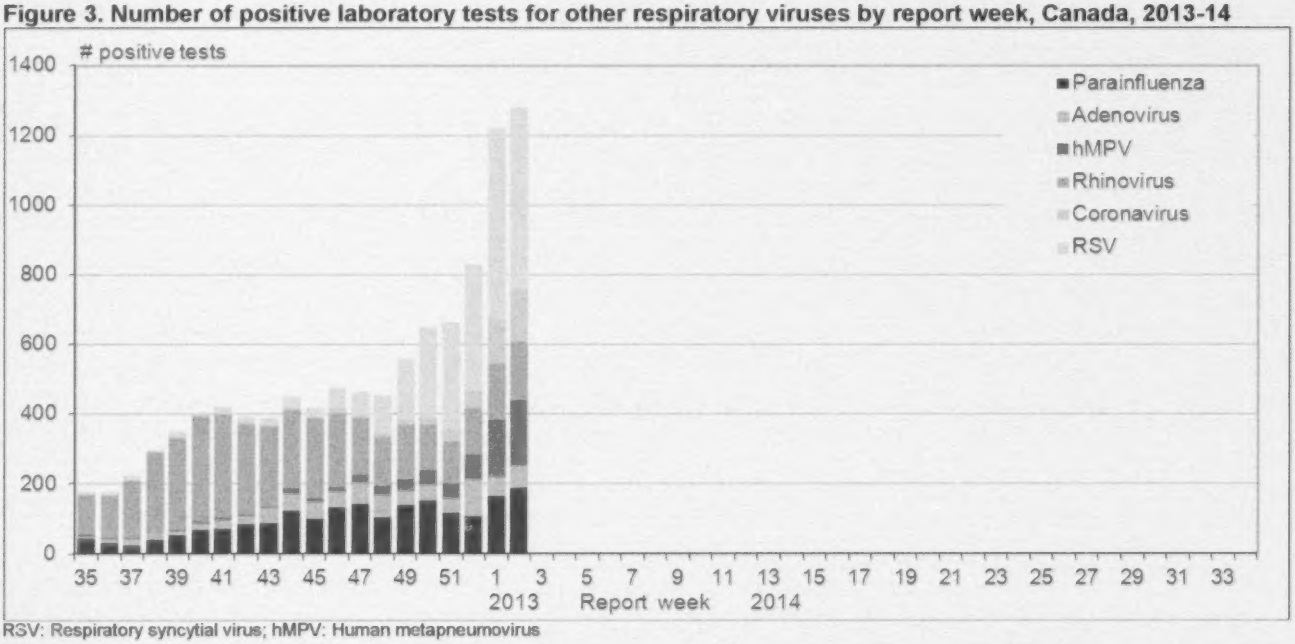
The number of positive influenza tests continued to increase, from 2,304 in week 01 to 3,403 in week 02. However, due to an increase in the number of tests performed, the percentage of positive influenza tests was stable at 28.7% (Figure 2). Cumulative influenza virus detections to date have been predominantly influenza A (96%). Among subtyped influenza A viruses, 97% (5,215/5,386) were A(H1N1)pdm09 (Table 1). Detailed information on age and type/subtype has been received for 7,467 cases to date this season. A significantly greater proportion of laboratory detections of influenza have been reported in adults 20-64 years of age compared to those ≥65 years of age this season compared to the 2012-13 season (Table 2). This is expected given the predominance of A(H1N1)pdm09 this season compared to 2012-13 when A(H3N2) was the dominant circulating subtype.

Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



In week 02, the number of positive tests for RSV decreased very slightly. RSV in Canada shows a seasonal pattern with a broad peak over the winter months. The number of positive tests for coronavirus and human metapneumovirus increased, while detections of rhinovirus and parainfluenza were stable compared to the previous week (Figure 3).
For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (January 5 to 11, 2014)					Cumulative (August 25, 2013 to January 11, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	463	405	11	47	6	887	779	26	82	21
AB	800	684	5	111	4	2332	2169	20	143	25
SK	360	254	0	106	1	725	484	0	241	1
MB	63	62	0	1	3	120	99	0	21	9
ON	859	269	15	575	19	2590	1319	121	1150	56
QC	607	67	0	540	91	1410	158	1	1251	259
NB	194	139	0	55	1	235	144	1	90	1
NS	13	10	1	2	0	30	12	2	16	0
PE	0	0	0	0	0	1	1	0	0	0
NL	44	15	0	29	20	82	50	0	32	26
Canada	**3403**	**1905**	**32**	**1466**	**145**	**8412**	**5215**	**171**	**3026**	**398**
Percentage[2]	95.9%	56.0%	0.9%	43.1%	4.1%	95.5%	62.0%	2.0%	36.0%	4.5%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

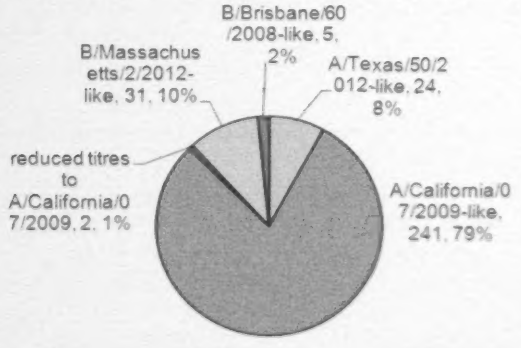
Age groups (years)	Weekly (January 5 to 11, 2014)					Cumulative (August 25, 2013 to January 11, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	244	104	1	139	2	1132	616	16	500	53	1185	15.8%
5-19	104	56	0	48	3	488	319	10	159	51	539	7.2%
20-44	589	314	1	274	22	2336	1393	16	927	92	2428	32.3%
45-64	507	252	4	251	25	1978	1150	22	806	134	2112	28.1%
65+	247	87	7	153	38	1019	470	36	513	184	1203	16.0%
Unknown	14	13	0	1	0	52	40	4	8	0	52	0.7%
Total	1,705	826	13	866	90	7005	3988	104	2913	514	7519	100.0%
Percentage[2]	95.0%	48.4%	0.8%	50.8%	5.0%	93.2%	56.9%	1.5%	41.6%	6.8%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 303 influenza viruses [24 A(H3N2), 243 A(H1N1)pdm09 and 36 influenza B]. The vast majority (98.3%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain. Five influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 303



The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 257 influenza viruses for resistance to oseltamivir and 255 viruses for resistance to zanamivir, and all were sensitive. All 167 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

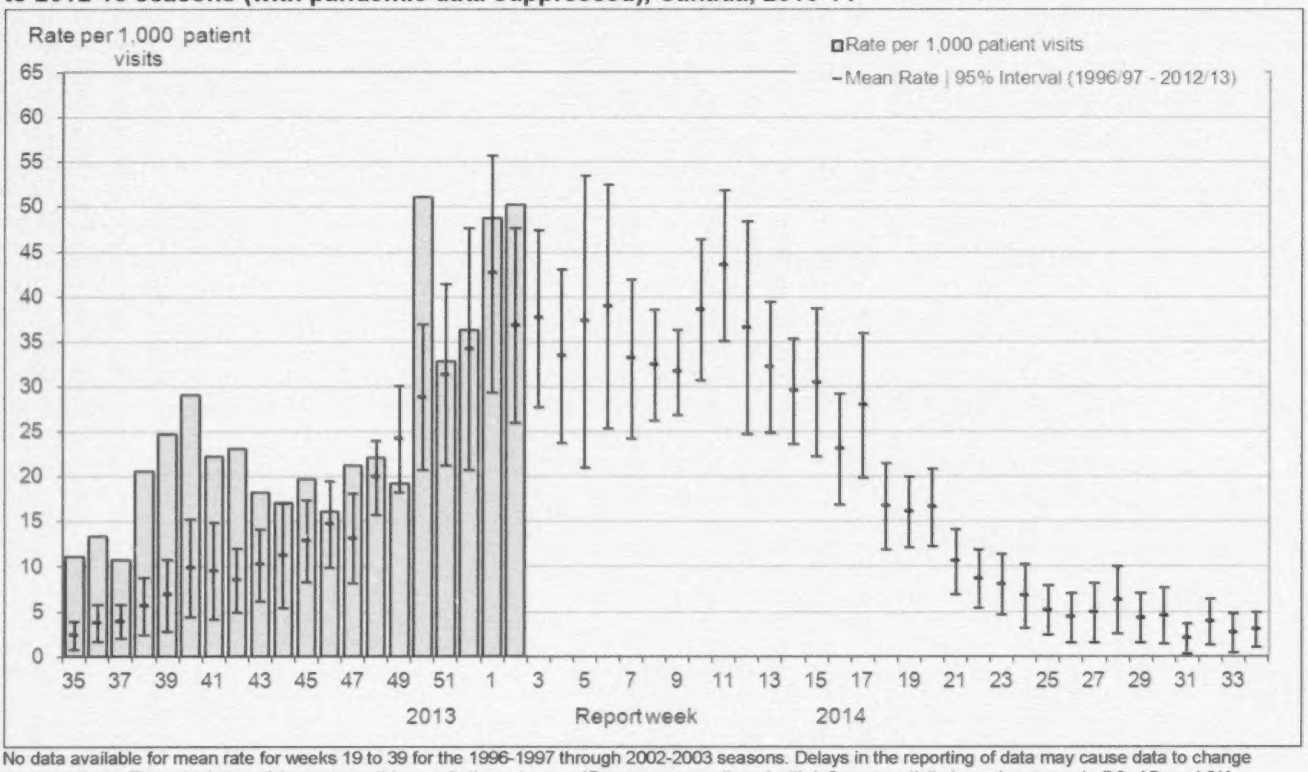
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	23	0	23	0	29	29 (100%)
A (H1N1)	201	0	199	0	138	138 (100%)
B	33	0	33	0	NA[1]	NA[1]
TOTAL	257	0	255	0	167	167 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate increased slightly from 48.8/1,000 in week 01 to 50.3 in week 02, which is above the expected range for week 02 but in keeping with the trend at this time of year (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

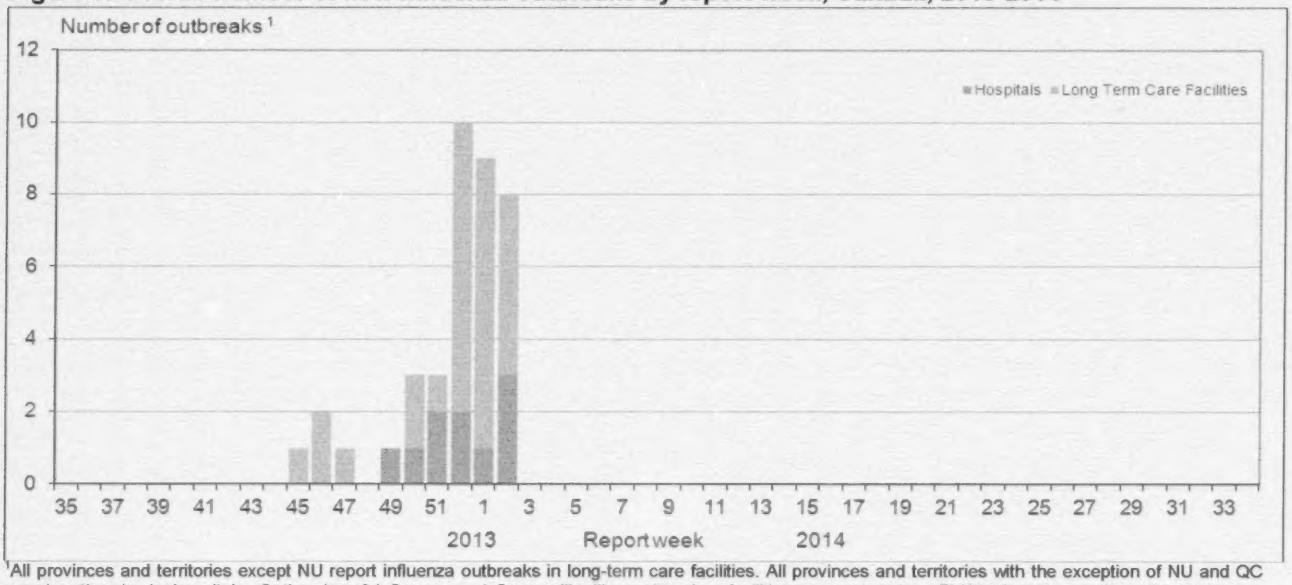


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 02, eight new influenza outbreaks were reported: five in long-term care facilities and three in hospitals (Figure 6). In addition, six outbreaks of influenza-like-illness were reported in week 02: one in a school and five in other facilities or communities.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

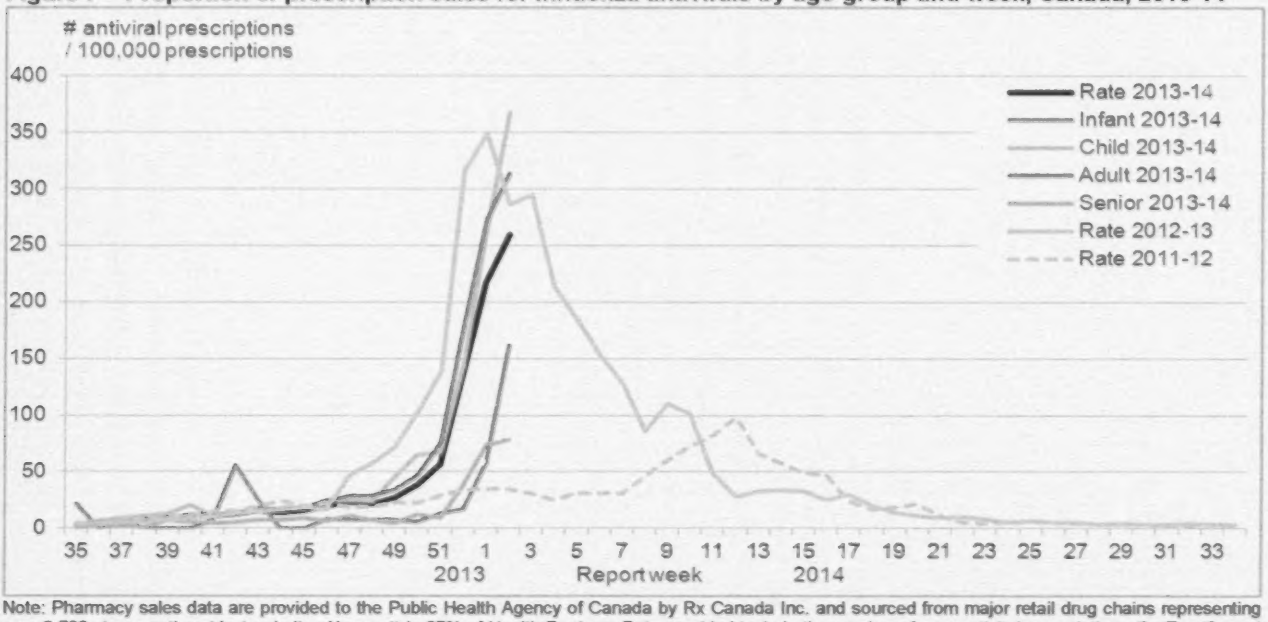


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

The rate of prescriptions for influenza antivirals continues to follow a trend consistent with the timing and demographics of laboratory detections of influenza this season. The largest proportions of prescriptions for antivirals are among adults 19-64 years of age and children 2-18 years of age (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 02, 47 new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 43 in week 01. All 47 hospitalizations in week 02 were cases with influenza A; 23% of these were A(H1N1)pdm09 and the remainder were A(unsubtyped) (Figure 8a). All but seven of the cases were <5 years of age. Three ICU admissions were reported in week 02, one child under 6 months of age, one child 6-23 months of age, and one 5-9 years of age; all with influenza A. No deaths were reported.

To date this season, a total of 235 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 95% of which have been influenza A, and the majority of those subtyped were A(H1N1)pdm09 (Table 4). One hundred and eighty-eight cases have been under 5 years of age. Thirty ICU admissions have been reported; all but two cases with influenza A, and the majority A(H1N1)pdm09. The highest proportion of ICU admissions have been among children aged 6-23 months (33.3%)(Figure 9a). Among the 25 ICU cases with available data, 20 were reported to have comorbidities or concurrent infection. No deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 02, 82 new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 129 in week 01. Among cases in week 02, 77 (93.9%) were influenza A, of which 22 (28.6%) were A(H1N1)pdm09 and 55 (71.4%) were A(unsubtyped). The highest proportion of hospitalizations occurred among adults 45-64 years (36; 43.9%) followed by adults aged ≥65 years of age (29; 35.4%). Seven ICU admissions were reported in week 02: one case 20-44 years of age, and six cases 45-64 years of age. One death was reported in an adult ≥65 years of age with influenza A(H1N1)pdm09 (Figure 8b).

To date this season, 399 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 384 (96.2%) with influenza A, predominantly A(H1N1)pdm09. The majority (74.2%) have been adults over 45 years of age (Table 5). As observed in other surveillance indicators, a significantly greater proportion of cases have been under 65 years of age this season compared to the 2012-13 season. ICU admission was required for 61 hospitalizations: 59 of which were cases of influenza A (37 A(H1N1)pdm09 and 22 A(unsubtyped)); 46 (75.4%) of the ICU admissions were >45 years of age. A greater proportion of cases reported this season have been admitted to the ICU compared to the 2012-13 season. Of the 24 ICU admissions with information on influenza vaccination, 17 reported not having been vaccinated this season. Five deaths have been reported: two cases ≥65 years of age with A(H1N1)pdm09, one case ≥65 years of age with A(unsubtyped), one case 45-64 years of age with influenza A(unsubtyped), and one case 20-44 years of age with influenza A(H1N1)pdm09 (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

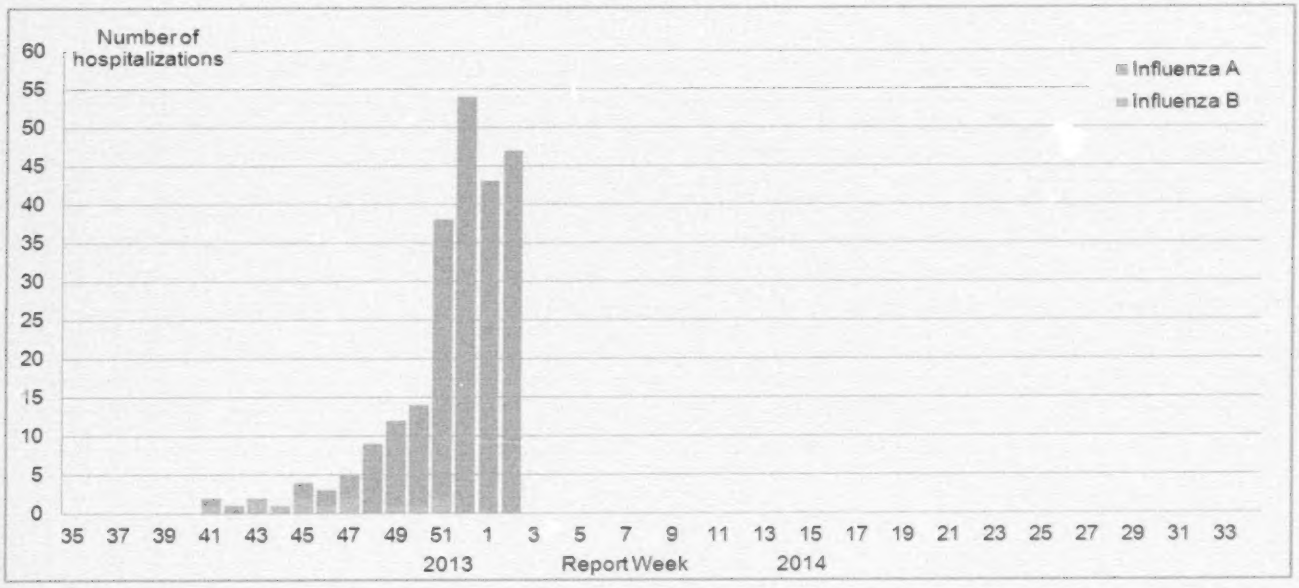
Age groups	Cumulative (25 Aug. 2013 to 11 Jan. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	49	13	0	36	1	50 (21%)
6-23m	59	26	0	33	2	61 (26%)
2-4y	72	27	1	44	5	77 (33%)
5-9y	26	10	0	16	3	29 (12%)
10-16y	16	7	0	9	2	18 (8%)
Total	222	83	1	138	13	235
% [1]	94.5%	37.4%	0.5%	62.2%	5.5%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

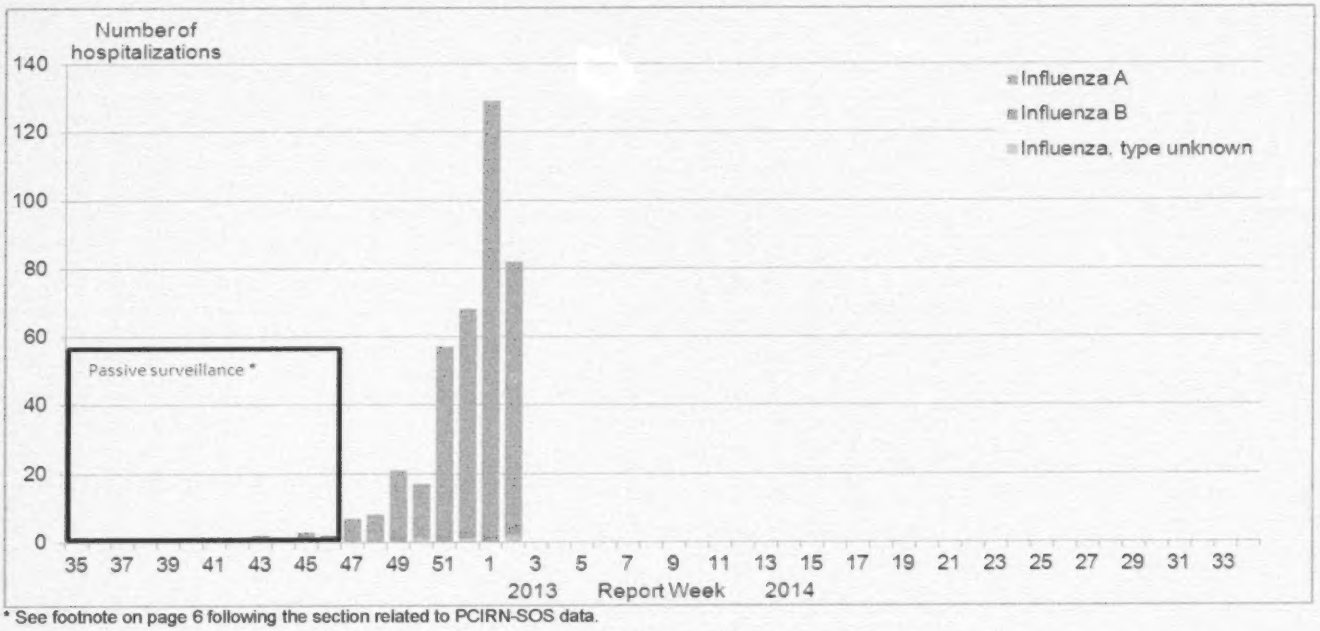
Age groups (years)	Cumulative (25 Aug. 2013 to 11 Jan. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	6	2	0	4	0	6 (2%)
20-44	94	36	1	57	0	94 (24%)
45-64	152	56	1	95	4	156 (40%)
65+	131	51	4	76	7	138 (35%)
Total	383	145	6	232	11	394
% [1]	97%	38%	2%	61%	3%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * Four cases for which the influenza type has not yet been reported, and one case for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



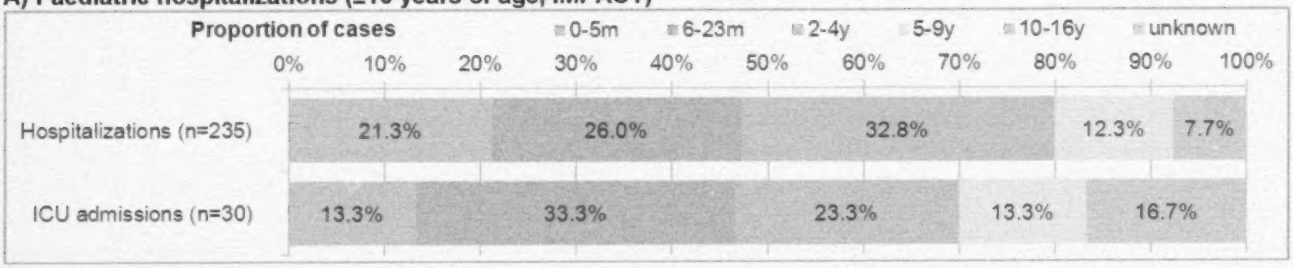
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



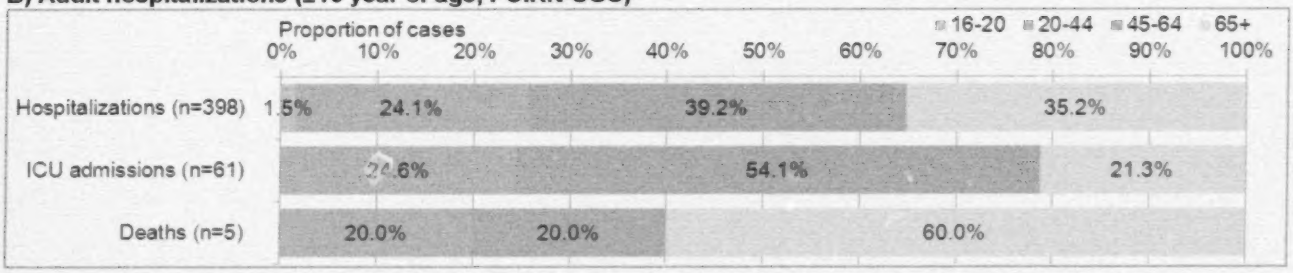
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 02, 426 new laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* The majority were cases of influenza A (420, 99%), of which 215 (51.2%) were A(H1N1)pdm09, 16 (3.8%) were A(H3N2), and 189 (45.0%) were A(unsubtyped). There were 19 ICU admissions in week 02, all with influenza A. Sixty-eight percent of the ICU admissions were among adults 20-64 years of age. Twenty-seven deaths were reported, all but two in adults 20 years of age and older, all with influenza A. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 1301 influenza-associated hospitalizations have been reported, 97.6% with influenza A (Table 6). Nearly 60% of hospitalizations have been cases 45 years of age or older. To date, a significantly greater proportion of adult cases (≥20 years of age) have been 20-64 years of age this season compared to the 2012-13 season which is consistent with the predominant circulation of A(H1N1)pdm09 this season. One hundred and thirty-five ICU admissions have been reported this season, all cases of influenza A; and 79% were among adults 20-64 years of age. Sixty deaths have been reported, and all but one were cases of influenza A. The highest proportion of deaths has been among adults 20-64 years of age (48.3%), followed by adults ≥65 years of age (43.3%). It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, NS, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 11 Jan. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	242	120	4	118	12	254 (20%)
5-14	53	33	2	18	4	57 (4%)
15-19	19	11	1	7	0	19 (1%)
20-44	220	143	2	75	1	221 (17%)
45-64	430	257	9	164	2	432 (33%)
65+	304	166	25	113	12	316 (24%)
Total	1268	730	43	495	31	1299
Percentage[1]	97.6%	57.6%	3.4%	39.0%	2.4%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.
* Two cases for which age information is not available have not been included in Table 6.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Twenty-two new cases of human infection with influenza A(H7N9) have been reported by the World Health Organization since the last FluWatch report. Globally to date, the WHO has been informed of a total of 181 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 52 deaths.

PHAC – Avian influenza A(H7N9)
WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

No new cases of MERS-CoV have been reported by the World Health Organization since the last FluWatch report. Globally, from September 2012 to date, the WHO has been informed of a total of 178 laboratory-confirmed cases of infection with MERS-CoV, including 75 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)
WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.